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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/807,262	10/11/2001	Lee Eisinger	0553.0012	4308

7590 06/27/2003

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EXAMINER
SAGAR, KRIPA

ART UNIT	PAPER NUMBER
1756	10

DATE MAILED: 06/27/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 09/807,262	Applicant(s) EISINGER, LEE	
	Examin r Kripa Sagar	Art Unit 1756	

-- The MAILING DATE of this communication appears on the c ver sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *08 April 2003* .

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-5,7 and 8* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-5,7 and 8* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *08 September 2001* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

Response to Amendment

1. The amendment filed 4/8/03 has been entered. Claim 1 has been amended. Claim 8 has been newly added. No new matter has been introduced by the amendment. Claims 1-5,7,8 are under consideration.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. Claims 1-5,7,8 are rejected under 35 U.S.C. 103(a) as being unpatentable over US Pat.5397683 to Roland in view of US Pat 4929402 to Hull The invention is directed to a method of texturing or patterning the surface of a prototype.

The claims recite the photolithographic steps to form textured or relief images on a surface, repeated cycles of lithographic patterning and patterning the surface of a prototype model.

Roland teaches all of the limitations in claim 1. These include providing a substrate (34) with a photoresist layer (32) as shown in Fig.2. Providing a pattern mask (30) with an image that is to be formed in relief on the substrate. The resist is exposed and developed to form the image in relief shown in Fig.7. The process uses a photo-

emulsion layer to overcoat the resist (cl.2) and re-exposes the second layer. The layers are dried (cl.3) after each application (Fig.1). Roland teaches that the entire process may be repeated after forming the image (cl. 5). Roland does not specifically teach cleaning the surface of the object before applying the resist (cl.4). Roland teaches feathering the edges of the features with an overcoat of resist (cl.8). Surface preparation prior to coating is conventional, well known in the art and includes pre-cleaning. This step is necessary to promote adhesion of the resist to the surface by removing any inhibiting films and further to remove particles adhering to the surface which would compromise the integrity of the pattern formed.

Roland does not teach forming the pattern on a prototype model formed by (SLG) stereolithography, or forming a prototype model with raised images (cl.7).

Stereolithography is a well-known art. Hull teaches rapid prototyping using SLG (1;36-46). The 3-dimensional object may be formed sequentially (layer-by-layer) by exposing a sheet of photosensitive liquid polymer to an image forming radiation (2;21-29). The layers are integrated (see Fig.1) to build up the final model (3; 14-16). Additional images can be formed on the side of the model (Fig.8; 10;48-68).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to use models formed by stereolithography as taught by Hull and to form the raised relief images on the models as taught by Roland to successfully design prototype models; because Hull teaches that the technique is flexible, versatile and reduces design cycle time and costs (11;28-64).

4. Claims 1-5,7,8 are rejected under 35 U.S.C. 103(a) as being unpatentable over US Pat.4914004 to Kohler in view of US Pat 4929402 to Hull and further in view of Roland.

Kohler's invention is directed towards forming relief images on surfaces and on 3-dimensional objects by a photolithographic process. The steps include coating a surface with a photoresist, irradiation through a mask and removing the areas not photo-polymerized to provide relief images. Three-dimensional objects may be coated and patterned (5;10-59).

Kohler does not teach using a stereo-lithographic model or softening the edges of features by overcoating with resist.

Stereolithography (SLG) is a well-known art. Hull teaches rapid prototyping using SLG (1;36-46). The 3-dimensional object may be formed sequentially (layer-by-layer) by exposing a sheet of photosensitive liquid polymer to an image forming radiation (2;21-29). The layers are cured between applications. The layers are integrated (see Fig.1) to build up the final model (3; 14-16). Additional images can be formed on the side of the model (Fig.8; 10;48-68).

Hull does not teach softening the edges of features by overcoating with resist.

This is a conventional practice as shown by Roland in fig.8. Roland's features are targeted towards tactile signs for the visually handicapped and require a smooth ("egg shell") finish.

Surface preparation prior to coating is conventional, well known in the art and includes pre-cleaning. This step is necessary to promote adhesion of the resist to the

surface by removing any inhibiting films and further to remove particles adhering to the surface which would compromise the integrity of the pattern formed.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to use models formed by stereolithography as taught by Hull and to form the raised relief images on the models as taught by Kohler to successfully design prototype models; because Hull teaches that the technique is flexible, versatile and reduces design cycle time and costs (11;28-64). One of ordinary skill in the art would have been motivated to soften the edges of features as taught by Roland because it is a conventional and proven method of improving the finish of the features for tactile design.

Response to Arguments

5. Applicant's arguments filed 4/8/03 have been fully considered but they are not persuasive.

Applicant has amended claim 1 to include forming raised features on a stereolithographic model and added claim 8 to recite rounding the edges of the features by overcoating with photoresist.

Applicant has argued that Pollak does not teach forming raised features using a photoresist. While other embodiments of Pollak teach forming the raised features using photoresist, Examiner agrees that the cited embodiment uses the raised feature as an etch mask. However it does teach forming raised images and recites the elements of

the instant claims. Regardless of the merits of the argument the rejection based on Pollak has been withdrawn.

Applicant has argued that Kohler's process does not teach forming the raised images on a stereolithographic model. The argument is not convincing. Kohler teaches forming raised features on a surface regardless of the method of forming the surface. Applicant recognizes the equivalence of a surface formed by stereolithography and by other methods. In the specification (p.6,l.21-22) Applicant states "However the method described herein of applying a texture or pattern to the surface is not limited to a stereolithographic part and can also be used on other parts".

With reference to Roland's teachings, Applicant argues that Roland does not teach: using a stereolithographic model; using the process to form a plastic prototype.

The use of a preformed stereolithographic model for texturing is not a persuasive argument as shown above. The intended use of the raised features formed by a process has not been recited in the instant claims.

In summary: The process steps claimed are conventional and routinely used in the art. Cleaning a surface prior to coating with photoresist is routine in the art, and though not used in the rejection, is taught by the reference of Hess cited in the earlier office action. Forming thick resist layers by repeated application and drying is also routine and is readily verified by Roland and Kohler. That the steps may be used to formed raised features is taught by Kohler. Overcoating features to smoothen the edges is taught by Roland. The cited references are directed to forming relief structures

on surfaces. Applicant recognizes that the structures formed on product surfaces are equivalent to those on prototype surfaces.

Conclusion

6. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kripa Sagar whose telephone number is 703-605-4427. The examiner can normally be reached on M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mark F Huff can be reached on 703-308-2464. The fax phone numbers for the organization where this application or proceeding is assigned are 703-872-9310 for regular communications and 703-872-9311 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0661.

MARK F. HUFF
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 1700

MH/ks
June 24, 2003